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| 10/519,857   | 08/15/2005  | Eiji Atsumi          | 885A.0005.U1(US)    | 9280             |
| 29683 7590 09/30/2009<br>HARRINGTON & SMITH, PC<br>4 RESEARCH DRIVE, Suite 202<br>SHELTON, CT 06484-6212 |             |                      |                     |                  |
| EXAMINER<br>THOMAS, MIA M  |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/519,857

**Applicant(s)**

ATSUMI ET AL.

**Examiner**

Mia M. Thomas

**Art Unit**

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 June 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 9-11 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-4, 9-11 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 02 June 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-8508)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. This Office Action is responsive to applicant's remarks received on 02 June 2009. Claims 1-4, 9-11 are rejected and claims 5-8 are canceled. A complete response to applicant's remarks follows here below.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 7,116,819) in combination with Matsuura (US 6823090 B2).

**Regarding Claim 1:** (Currently Amended-As best understood by the Examiner <sup>see note below</sup>)

Zhang teaches An information terminal ("An image processing apparatus for processing RGB image data output from an image capturing element including a primary-color filter..." at abstract; "FIG. 1 including

data operation processing means for performing operation processing for input image data and preparing output image data (Refer to Figure 1, numeral 4: "a first RGB interpolation section (RGB interpolation section for extraction of middle-high range luminance component) 4..." at column 9, line 65; for clarity the image processing apparatus prepares processed image data throughout the various modules to be output);

and data processing means, for performing another interpolation process that is more complicated than the removed interpolation process for data obtained by the removal means and for preparing output image data (Refer to Figure 1, numeral 12; "a second RGB interpolation section (RGB interpolation section for generation of low-frequency luminance signal generation and color-difference signal) 12." at column 10, line 26)

Matsuura teaches removal means, for performing an intermittent process for input image data resulting from an interpolation process, and removing, from the output image data, part or all of the steps of an interpolation process (Refer to Figure 3; also at column 3, line 66-column 4, line 3; Figure 1, numeral 101, 105, 106, Step S203 and 112, also at column 2, line 63 to column 3 to line 65, wherein the "X-ray generation circuit 101" in combination with the "Image Processing Circuit 112" work together to provide removal means for input image data (S201) from an interpolation process (numeral 120 and 121) for removing part or all of the interpolation process as described in the corresponding specification regarding for example "feature extraction", numeral 118).

Note: The applicant has not readily identified exactly how one skilled in the art may determine if the "data processing means" is "more complicated" than another "data processing means" so the Examiner has interpreted that the "data processing means" is "different" and further "more complicated" than another "data processing means" and this analysis of the claim will be applied in this manner.

Zhang and Matsuura are combinable because they are in the same field of image transformation by correcting or changing image characteristics.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to intermittently process image data to remove at least a part or all of an interpolation processing.

The motivation/suggestion for doing so would have been "to efficiently attain noise removal." (Abstract, Matsuura). Further another motivation/suggestion to combine the teachings of Zhang and Matsuura to utilize an information terminal to processing image data would have been "changing an image and, more particularly, changing transformation coefficients upon frequency transformation..." (refer to column 1, lines 7-11, Matsuura)

Therefore, it would have been obvious to the skilled artisan to combine the teachings of Zhang and Matsuura to obtain the specified claimed elements of Claim 1.

**Regarding Claim 4:** (Currently Amended) Claim 4 has claimed subject limitations that equally resemble Claim 1. Claim 4 as recited are the claimed method steps in equivalence with the claimed apparatus of Claim 1. Claim 4 encompasses the operational steps to be performed in the apparatus of Claim 1. Therefore, claim 4 is rejected for the same reasons, motivation and rationale as rejected above at Claim 1.

4. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 7,116,819) in combination with Matsuura (US 6823090 B2) and further in view of Okada (6,977,683 B1)

**Regarding Claim 2:** (Currently Amended) Okada ('683) teaches a camera module (Refer to abstract) includes a lens, (Refer to Figure 1, numeral 2-"Image Pickup Lens") a image sensor

("A digital camera employs an image sensor..." at abstract; "a CCD equipped with color filters that separate the image signals into data of different colors..." at column 3, line 8) and a camera digital signal processor, (Refer to Figure 3, numeral 26-DSP/"Digital Signal Processing Circuit"), and wherein: the camera digital signal processor includes color correction means (Refer to Figure 1; numeral 5- "a signal processor 5"; "of the digital signals obtained by means of the components described above, a first memory 6 that temporarily stores the image data that has undergone signal processing in the signal processor 5..." at column 3, line 14); gamma correction means ("gamma correction..." at column 3, line 13) color interpolation means and image quality correction means ("For example, note at Figure 4, see beneath the arrow that states-"Color Separation and Interpolation"—Specifically, see Figure 7-"Filter Alignment Data"),

the camera module produces the input image data (Figure 1 represents the digital camera as noted at numeral 1, thus producing numeral 21-"Data Input Unit")

Matsuura teaches and the removal means performs an intermittent process for pixels that are interpolated by the color correction means of the camera digital signal processor, minimizes affects due to a color correction process (Refer to Figures 1-3 where the "image Processing Circuit" performs intermittent processes for pixels that are interpolated within the circuit in combination with the "X-ray Generation Circuit")

Zhang teaches an image quality correction process that are performed by the camera digital signal processor (Refer to numerals 13 and 14; also at column 13, line 24, further at column 1, line 6)

and again performs an arbitrary color interpolation process that is more complicated than the removed interpolation process and an arbitrary image quality correction process (Refer to Figure 1, numeral 12; "a second RGB interpolation section (RGB interpolation section for generation of low-frequency luminance signal generation and color-difference signal) 12." at column 10, line 26).

Note: The applicant has not readily identified exactly how one skilled in the art may determine if the "data processing means" is "more complicated" than another "data processing means" so the Examiner has interpreted that the "data processing means" is "different" and further "more complicated" than another "data processing means" and this analysis of the claim will be applied in this manner.

Zhang, Matsuura and Okada are combinable because they are in the same field of image transformation by correcting or changing image characteristics.

All of the claimed elements were known in the prior art at the time of the invention. It would have been obvious to combine the teachings of Zhang, Matsuura and Okada to obtain the instant claimed recitations. Specifically, at the time that the invention was made, it would have been obvious to one of ordinary skill in the art to intermittently process image data to remove at least a part or all of an interpolation processing.

Zhang, Matsuura and Okada each recite image processing apparatuses for processing images with respect to color.

This claim would have been obvious because the substitution of a "digital camera" as expressly taught by Okada would have yielded predictable results to the skilled artisan at the time of the invention. Okada has been introduced to exemplify the specific elements of the image processing apparatus. The functionality of these image processing apparatuses of Zhang, Matsuura and Okada are well known in the art.

Therefore, it would have been obvious to the skilled artisan to combine the teachings of Zhang, Matsuura and Okada to obtain the specified claimed elements of Claim 2.

**Regarding Claim 9:** (Previously Presented) Claim 9 has claimed subject limitations that equally resemble Claim 2. Claim 9 as recited are the claimed method steps in equivalence with the claimed apparatus of Claim 2. Claim 9 encompasses the operational steps to be performed in the apparatus of Claim 2. Therefore, claim 9 is rejected for the same reasons, motivation and rationale as rejected above at Claim 2.

6. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 7,116,819) in combination with Matsuura (US 6823090 B2) and Okada (6,977,683 B1) and further in view of Juenger et al (US 5778106 A).

**Regarding Claim 3:** (Currently Amended) Zhang in combination with Matsuura and Okada teach all the claimed elements as rejected above. Zhang in combination with Matsuura and Okada does not expressly teach identifying arrangement patterns for color filters and separating color elements of pixels during an interpolation process.



Juenger on the other hand teaches the removal means identifies an arrangement pattern for color filters that are laid on the image sensor ("The invention includes optimization of the pixel geometry for capability of balanced sharpness in each of two orthogonal sampling directions in the context of striped color filter arrays and dual resolution reconstruction." at column 3, line 61)

and separates color elements of pixels generated during the interpolation process from color elements of pixels used to produce those color elements ("For example, many CCD's, as previously described, use colored stripes mechanically attached to the CCD to filter colors, thereby making individual pixels associated with only one color. These individual pixels are broken into color planes. Therefore, if colored stripes of red, green, and blue ("RGB") are attached to the CCD, then the pixels associated with each individual color are broken into a red color plane, a green color plane, and a blue color plane." at column 3, line 65)

and selectively performs an intermittent process for the color elements of the pixels generated during the interpolation process ("Therefore, the next step is to interject interpolated image signals in each of the color planes that correspond to the image signal locations left void by the separation step. This now forms a triplet for each color location in the image. Previously, a single pixel location would contain only information on one color, red for example. Now, with the interpolated data, each pixel location has RGB information associated therewith." at column 4, line 9).

Zhang, Matsuura, Okada and Juenger are combinable because they are in the same field of image transformation and color correction, specifically interpolation or changing image characteristics.

All of the claimed elements were known in the prior art at the time of the invention. It would have been obvious to combine the teachings of Zhang, Matsuura, Okada and Juenger to obtain the instant claimed recitations. Specifically, at the time that the invention was made, it would have been obvious to one of ordinary skill in the art to separates color elements of pixels generated during the interpolation process from color elements of pixels used to produce those color elements.

Zhang, Matsuura, Okada and Juenger each recite image processing apparatuses for processing images with respect to color.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to separates color elements of pixels generated during the interpolation process from color elements of pixels used to produce those color elements and selectively perform an intermittent process for the color elements of the pixels.

The suggestion/motivation for doing so would have been "to provide an image sensor and an associated electronic imaging camera in which the sharpness of the reconstructed image is matched in various sampling directions in various resolution modes." at column 3, line 41-45, Juenger.

Therefore, it would have been obvious to the skilled artisan to combine the teachings of Zhang, Matsuura, Okada and Juenger to obtain the specified claimed elements of Claim 3.

**Regarding Claim 10:** (Currently Amended) Zhang in combination with Matsuura and Okada teach all the claimed elements as rejected above. Zhang in combination with Matsuura and Okada does not expressly teach recognizing arrangement patterns for color filters and separating color elements of pixels during an interpolation process.

Juenger teaches performing the intermittent processes further comprises recognizing an arrangement pattern for color filters that are laid on the image sensor ("The invention includes optimization of the pixel geometry for capability of balanced sharpness in each of two orthogonal sampling directions in the context of striped color filter arrays and dual resolution reconstruction." at column 3, line 61) separating color elements of pixels generated during the first interpolation processes from color elements of pixels used to produce those color elements ("For example, many CCD's, as previously described, use colored stripes mechanically attached to the CCD to filter colors, thereby making individual pixels associated with only one color. These individual pixels are broken into color planes. Therefore, if colored stripes of red, green, and blue ("RGB") are attached to the CCD, then the pixels associated with each individual color are broken into a red color plane, a green color plane, and a blue color plane." at column 3, line 65)

and selectively processing color elements of pixels generated during the first interpolation processes ("Therefore, the next step is to interject interpolated image signals in each of the color planes that correspond to the image signal locations left void by the separation step. This now forms a triplet for each color location in the image. Previously, a single pixel location would contain only information on one color, red for example. Now, with the interpolated data, each pixel location has RGB information associated therewith." at column 4, line 9).

Zhang, Matsuura, Okada and Juenger are combinable because they are in the same field of image transformation and color correction, specifically interpolation or changing image characteristics.

All of the claimed elements were known in the prior art at the time of the invention. It would have been obvious to combine the teachings of Zhang, Matsuura, Okada and Juenger to obtain the instant claimed recitations. Specifically, at the time that the invention was made, it would have been obvious to one of ordinary skill in the art to separates color elements of pixels generated during the interpolation process from color elements of pixels used to produce those color elements.

Zhang, Matsuura, Okada and Juenger each recite image processing apparatuses for processing images with respect to color.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to separates color elements of pixels generated during the interpolation process from color elements of pixels used to produce those color elements and selectively perform an intermittent process for the color elements of the pixels.

The suggestion/motivation for doing so would have been "to provide an image sensor and an associated electronic imaging camera in which the sharpness of the reconstructed image is matched in various sampling directions in various resolution modes." at column 3, line 41-45, Juenger.

Therefore, it would have been obvious to the skilled artisan to combine the teachings of Zhang, Matsuura, Okada and Juenger to obtain the specified claimed elements of Claim 10.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 7,116,819) in combination with Matsuura (US 6823090 B2) and further in view of Kagle et al. (US 6601056 B1).

**Regarding Claim 11:** (Currently Amended) Zhang and Matsuura in combination teach all the claimed elements as rejected above. Zhang and Matsuura in combination do not expressly teach a mobile device. However, Kagle teaches the information terminal of claim 1 embodied in a mobile device. (Refer to Figure 2, numeral 20; specifically, "For example, many digital devices are arranged to work with removable digital storage cards or media. Removable storage media usually employ flash memory. Flash memory is non-volatile and is ideal for mobile or hand-held devices" at column 1, lines 13-column 2, line 10).

Zhang, Matsuura and Kagle are combinable because they are in the same field of image and data transformations by correcting or changing image characteristics with a particular operator interface feature.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to utilize the apparatus and method of claims 1 and 4, respectively in a mobile device. The motivation/suggestion for doing so would have been to create "a removable digital medium that supports a plurality of data formats and provides for the conversion of data from a particular format to a format that is compatible with a host device in which it is connected is needed. In

addition, a removable digital medium that supports a plurality of data formats and provides for the conversion of data from a particular format to a format that is selected by a host device in which it is connected is needed." at column 2, lines 3-10-Kagle.

Therefore, it would have been obvious to the skilled artisan to combine the teachings of Zhang, Matsuura and Kagle to obtain the specified claimed elements of Claim 11.

### ***Response to Arguments***

6. Applicant's arguments filed 02 June 2009 have been fully considered. Claims 1-4 and 10-11 have been amended for clarification. Support for the amendments may be found at least in paragraphs [0048]-[0054] and [0095] of the published application. No new matter is added.

A complete response to those remarks is provided below.

Regarding Claim rejections under 35 USC 101, as detailed at page 6 of applicant's remarks, the rejections of claims 4, 9 and 10 are withdrawn.

Regarding Claim objections under 37 CFR 1.75(c), as detailed at page 6 of applicant's remarks, the objections to claim 11 have been withdrawn.

Summary as detailed at page 7 of applicant's remarks: Regarding the rejection of claim 1, The Applicants submit that, although the proposed combination is not agreed to as proper, neither Zhang nor Juenger, alone or combined, can be seen to disclose or suggest claim 1.

Examiners Response: The Examiner respectfully disagrees. In view of the newly amended claim, The applicant has not readily identified exactly how one skilled in the art may determine if the "data processing means" is "more complicated" than another "data processing means" so the Examiner has interpreted that the "data processing means" is "different" and further "more complicated" than another "data processing means" and this analysis of the claim will be applied in this manner. The examiner has rejected the claims as noted above under Section # 5 (35 USC 103(a). Claim 1 is rejected as being unpatentable over Zhang (US 7,116,819) in combination with Matsuura (US 6823090 B2).

With regards to the arguments as detailed at page 7 regarding Zhang and Juenger: the arguments are moot in view of new grounds of rejection. See newly rejected claims above.

With regards to the arguments as detailed at page 8 regarding the prior art rejections ("It is clear that the references cited cannot be seen to disclose or suggest claims 1-4, 9-11."): the arguments are moot in view of new grounds of rejection. See newly rejected claims above.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2005/0068421 A1 US 7330189 B2

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is (571)270-1583. The examiner can normally be reached on Monday-Thursday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you



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would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W Johns/  
Primary Examiner, Art Unit 2624

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Examiner, Art Unit 2624